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CHAPTER 13

Glossary

This glossary lists terms that may not be familiar to some readers of this document. Several sources of definitions are available including *Glossary of Terms used in DOE NEPA Documents* (DOE 1998l) and *Environment, Safety and Health Thesaurus/Dictionary* (DOE 1998k). The last citation is available through the Internet (http://tis.eh.doe.gov/docs/dict/).

– A –

Abatement: Reducing the degree or intensity of, or eliminating, pollution.

Absorbed dose: For ionizing radiation, the energy imparted to matter by ionizing radiation per unit mass of irradiated material. The units of absorbed dose are the rad and the gray, where 1 rad equals 0.01 gray.

Accelerator: A device that accelerates the motion of charged particles (such as electrons, protons, or atomic nuclei) to high velocities, thus giving them high kinetic energies. The accelerated particles may be used in industrial and medical applications or in research on nuclear or subnuclear phenomena.

Accident: An unplanned event or sequence of events that result in undesirable consequences.

Advanced components: A part or material that has been improved such that it is considered state-of-the-art.

Advanced manufacturing technologies: The science or study of the technology associated with the design, fabrication, theory, and application of state-of-the-art manufacturing that uses prototype research and development of new technologies.

Advanced materials: A material that has been improved such that it is considered state-of-the-art.

Air dispersion modeling: A mathematical simulation, usually computer-generated, of how gases, vapors, or particles disperse into the air.

Air pollutant: Generally, an airborne substance that could, in high enough concentrations, harm living things or cause damage to materials. From a regulatory perspective, an air pollutant is a substance for which emissions or atmospheric concentrations are regulated or for which maximum guideline levels have been established due to potential harmful effects on human health and welfare.

Air Quality Control Region (AQCR): Geographic subdivisions of the United States established to regulate pollution on a regional or local level. Some regions span more than one state.

Air quality standards: The level of pollutants prescribed by regulations that may not be exceeded during a specified time in a defined area.

Airblast noise: Noise, typically from the detonation of explosives. The noise is of short duration (less than three seconds) and in the form of an impulse.

Alluvial fan: A fan-shaped accumulation of sediment deposited by flowing water, marking the place where a stream moves from a steep slope to a flatter slope and suddenly loses its transporting power.

Alluvial slope: The sloping surface formed by an alluvial fan.

Alluvium layer: Layer of soil deposited by running water. Typically, alluvium has a high rate of groundwater transmission.

Alpha particle: A positively charged particle ejected spontaneously from the nuclei of some radioactive elements. It has low penetrating power and a short range (a few centimeters in air).

Alpha radiation: A strongly ionizing, but weakly penetrating form of radiation consisting of positively charged alpha particles emitted spontaneously from the nuclei of certain elements during radioactive decay.

Ambient air: Any unconfined portion of the atmosphere: open air, surrounding air. That portion of the atmosphere, external to buildings, to which the general public has access.

Analytical modeling: Computer-generated mathematical calculations used to determine the potential results of an action.

Aquifer: A body of rock or sediment under the earth's surface that is capable of transmitting groundwater and yielding usable amounts of groundwater to supply wells and springs. A saturated geologic unit through which significant quantities of water can migrate under natural hydraulic gradients.

Archaeological sites (resources): Any material remains of past human life or activities that are of archaeological interest.

Artifact: An object produced or shaped by human workmanship that is of archaeological or historical interest.

As low as reasonably achievable (ALARA): An approach to radiation protection to manage and control exposures (both individual and collective) and releases of radioactive material to the environment to as far below applicable limits as social, technical, economic, practical, and public policy considerations permit. ALARA is not a limit, but a process for minimizing doses to as far below limits as is practicable.

Asphyxiant: Chemical vapors or gases that replace oxygen in air. Chemical asphyxiants prevent oxygen transfer from the blood to body cells. Physical asphyxiants prevent oxygen from reaching the blood.

Atmospheric photochemical reactions: Chemical reactions that occur in the atmosphere and are initiated by sunlight.

Attainment area: An area that the U.S. Environmental Protection Agency (EPA) has designated as being in compliance with one or more of the National Ambient Air Quality Standards (NAAQS) for sulfur dioxide, nitrogen dioxide, carbon monoxide, ozone, lead, and particulate matter. An area may be in attainment for some pollutants but not for others.

– B –

Background radiation: Radiation from 1) cosmic sources; 2) decay of naturally occurring radioactive materials, including radon (except as a decay product of source or special nuclear material); and 3) global fallout from nuclear weapons as it exists in the environment (such as from the testing of nuclear explosive devices).

Baseline: The existing environmental conditions against which impacts of the alternatives can be compared. For this Site-Wide Environmental Impact Statement (SWEIS), the environmental baseline is the environmental condition of the site as it existed in 1997, unless otherwise stated.

Beta radiation: Ionizing radiation consisting of fast moving, positively or negatively charged elementary particles emitted from atomic nuclei during radioactive decay. Beta radiation is more penetrating but less ionizing than alpha radiation.

Bioassay: Using living organisms to measure the effect of a substance, factor, or condition by comparing before and after data. Term is often used to mean cancer bioassays.

Biohazardous waste: Any waste that is capable of transmitting an infectious agent to a living organism. This includes discarded materials such as live and weakened vaccines, blood, excretions or secretions, animal carcasses and animal waste products, hypodermic needles, syringes, and broken glass items such as blood vials.

Biological province: A continuous geographic area that possesses an animal life distinguishable, at the species and subspecies levels, from the animal life of adjacent areas.

Biological resource: Plants, animals, and other living organisms.

Biomass: All the living and once-living material in a given area; often refers to the vegetation.

Bioscience: The science or study of the technology associated with the design, fabrication, theory, and application of biological processes.

Biouptake: Absorption or incorporation of an element or chemical compound, such as lead, dioxin, polychlorinated biphenyl (PCB), or uranium, into a living organism.

Block group: A basic unit of estimated population used by the U.S. Census Bureau to define the demographics of an area. In urban areas, block groups are comprised of clusters of 1 to 4 city blocks, generally containing between 250 and 550 housing units. In rural areas, where population densities are smaller, block groups are larger areas defined by physical features such as rivers, political boundaries (such as city limits or county lines), and other reasonable criteria.

Bounding analysis: An analysis designed to determine an upper limit to potential impacts or risks.

Buffer zone: On Kirtland Air Force Base, the area surrounding a testing site. The size and configuration of a buffer zone is designed to accommodate different types and quantities of explosives and the type(s) of facilities or land use adjacent to the site.

– C –

Cancer: A group of diseases characterized by uncontrolled cellular growth with invasive characteristics, such that the disease can transfer from one organ to another.

Candidate species: Plants and animals that the U.S. Fish and Wildlife Service or the National Marine Fisheries Service has sufficient information on biological vulnerability and threats to justify proposing to add them to the threatened and endangered species list, but cannot do so immediately because of the relative listing priority of candidates.

Carbon coating: Surface coating with carbon.

Carbon dioxide (CO_2): A colorless, odorless, nonpoisonous gas that is a normal component of the ambient air; it is a product of normal plant and animal respiration and of the decay of organic matter.

Carbon monoxide (CO): A colorless, odorless gas that is toxic if breathed in high concentration over a period of time. It is formed as the product of the incomplete combustion of hydrocarbons (fuels).

Carcinogen: A substance that can cause or contribute to the production of cancer.

Cathodic protection: A technique to prevent corrosion of metal surfaces.

Centrifuge: A device that spins items in a circle at high velocities (speed), which can be used to simulate high gravity conditions.

Ceramic processing: Operations and activities involving heat-resistant and corrosion-resistant nonmetallic materials.

Chemical plating: A process in which chemicals are used to coat a surface (typically metallic) with another material. The purpose is typically to improve the material properties such as rust protection.

Clean room: An area that is maintained virtually free of contaminants (such as dust or bacteria); used in laboratory work and in the production of precision parts for electronic equipment.

Climatology: The science that deals with climates and investigates their phenomena and causes.

Cobalt array: An arrangement of the metal cobalt that provides low-intensity gamma radiation.

Committed dose equivalent: The dose equivalent to organs or tissues that will be received by an individual during the 50-year period following the intake of radioactive material. It does not include contributions from radiation sources external to the body.

Committed effective dose equivalent: The dose value obtained by multiplying the committed dose equivalent for the organ or tissues that are irradiated and the weighting factors applicable to those organs or tissues, and summing all the resulting products.

Community (biotic): All plants, animals, and living organisms occupying a specific area.

Comprehensive Test Ban Treaty: A proposed treaty prohibiting nuclear tests of all magnitudes.

Container: Portable devices in which a material is stored, transported, treated, disposed of, or otherwise handled.

Contaminant: Physical, chemical, biological, or radiological substances or matter that may have an adverse effect on air, water, or soil.

Cooling tower: A structure that helps remove heat from water used as a coolant.

Cooperating agency: Any Federal agency, other than the lead agency, that has jurisdiction by law or special expertise over any environmental impact resulting from a proposed Federal action.

Criteria pollutants: An air pollutant that is regulated by National Ambient Air Quality Standards (NAAQS). The U.S. Environmental Protection Agency (EPA) must describe the characteristics and potential health and welfare effects that form the basis for setting or revising the standard for each regulated pollutant. Criteria pollutants include sulfur dioxide, nitrogen dioxide, carbon monoxide, ozone, lead, and particulate matter.

Cultural resources: Prehistoric or historic sites, buildings, structures, districts, or other places or objects (including biota of importance) considered to be important to a culture, subculture, or community for scientific, traditional, or religious purposes or for any other reason. This includes archaeological sites, traditional use areas, and sacred or religious locations.

Cultural resource survey: An inventory across the landscape to find and identify cultural resources and an evaluation of those resources for eligibility for listing on the National Register of Historic Places.

Cumulative impacts: The impacts on the environment that result when the impact of a proposed action is added to the impacts from other past, present, and reasonably foreseeable future actions, regardless of what agency or person undertakes the other actions. Cumulative impacts can result from individually minor, but collectively more significant, actions taking place over a period of time.

– D –

Daughter: The immediate product of the radioactive decay of an element.

Decommission: The process of withdrawing a building, equipment, or a facility from active service.

Decontamination: The actions taken to reduce or remove substances that pose a substantial present or potential future hazard to human health or the environment. Examples are removal of radioactive or chemical contamination from facilities, equipment, or soils by washing, heating, chemical or electrochemical action, mechanical cleaning, or other techniques.

Deflagration: Burning or causing to burn with intense heat and light.

Degradation: Process by which a chemical or compound is reduced to a less complex form.

Depleted uranium: Uranium whose content of the fissile uranium-235 isotope is less than the 0.7 percent (by weight) found in natural uranium, so that it contains more uranium-238 than natural uranium.

Deposition technologies: Technologies involving laying one material on the surface of another material.

Deuterium: An isotope of hydrogen with a nucleus containing one proton and one neutron. The hydrogen nucleus only contains one proton.

Dielectric materials: Materials that do not conduct direct electrical current.

Diffusion bonding: A process of coating one material with thin layers of another material.

Diurnal: Pertaining to, or occurring in, the day or each day (daily).

Dose (chemical): The amount of a substance administered to, taken up by, or assimilated by an organism. It is often expressed in terms of the amount of substance per unit mass of the organism, tissue, or organ of concern.

Dose (radiological): A generic term meaning absorbed dose, dose equivalent, effective dose equivalent, and committed equivalent dose.

Dosimetry: The theory and application of the principles and techniques involved in measuring and recording radiation doses.

Drainage area: An aboveground land area that supplies water to a particular stream or river.

Drawdown: The lowering of the water table (upper aquifer surface) in response to water withdrawal from the aquifer.

Drinking water standards: The prescribed level of constituents or characteristics in a drinking water supply that cannot be exceeded legally.

– E –

Ecosystem: A community of organisms and their physical environment interacting as an ecological unit.

Effluent: Treated or untreated air emissions or liquid discharges.

Eligible cultural resource: A cultural resource that has been evaluated and reviewed by an agency and the State Historic Preservation Officer and determined eligible for inclusion in the National Register of Historic Places, based on the criteria of significance and eligibility.

Emergency response planning guideline level 2 (ERPG-2): The ERPG-2 is the maximum airborne concentration below which it is believed that nearly all individuals could be exposed for up to one hour without experiencing or developing irreversible or other serious health effects or symptoms that could impair their abilities to take protective action.

Emission standards: Requirements established by a state, local government, or the U.S. Environmental Protection Agency (EPA) Administrator that limits the quantity, rate, or concentration of emissions of air pollutants on a continuous basis.

Emissions: Pollution discharged into the atmosphere from smoke stacks, other vents, and surface areas of commercial or industrial facilities, residential chimneys, and vehicle exhausts.

Encapsulate: Enclose by a protective coating or membrane.

Endangered species: Plants or animals that are in danger of extinction throughout all or a significant portion of their ranges and that have been listed as endangered by the U.S. Fish and Wildlife Service or the National Marine Fisheries Service following the procedures outlined in the *Endangered Species Act* and its implementing regulations.

Environmental assessment (EA): A public document that a Federal agency prepares under the *National Environmental Policy Act* (NEPA) to provide sufficient evidence and analysis to determine whether a proposed agency action would require preparation of an environmental impact statement (EIS) or finding of no significant impact (FONSI).

Environmental impact statement (EIS): The detailed written statement that is required by section 102(2) of the *National Environmental Policy Act* (NEPA) for a proposed major Federal action significantly affecting the quality of the human environment. A U.S. Department of Energy (DOE) EIS is prepared in accordance with applicable requirements of the Council on Environmental Quality NEPA regulations in 40 CFR Parts 1500-1508, and DOE NEPA regulations in 10 CFR Part 1021.

Environmental justice: The fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. Fair treatment means no group of people, including racial, ethnic, or socioeconomic groups, should bear a disproportionate share of the negative environmental consequences resulting from industrial, municipal, and commercial operations or the execution of Federal, state, local, and tribal programs and policies.

Ephemeral: Lasting for a brief period of time, as in a temporary stream.

Epidemiology: The science concerned with the study of events that determine and influence the frequency, distribution, and causes of disease, injury, and other health-related events in a defined human population.

Erosion: The wearing away of land surfaces by the action of wind or water.

Exotic species: Species of plants and animals that are not native to a region. They often displace native species and may become pests.

Explosion (conventional): A chemical reaction or change of state that occurs in a exceedingly short time with the generation of high temperatures and large quantities of gaseous reaction products.

Explosion (nuclear): An explosion for which the energy is produced by a nuclear transformation, either fission of fusion. The term typically implies the release of enormous amounts (kilotons) of energy.

Exposure pathways: The course a chemical or physical agent takes from the source to the exposed organism. An exposure pathway describes a mechanism by which an individual or population is exposed to chemicals or physical agents at or originating from the site.

– F –

Fast-burst reactor: An operational mode of a reactor that releases fast energy in a short period of time.

Fault: A fracture or a zone of fractures within a rock formation along which vertical, horizontal, or transverse slippage has occurred.

Finding of No Significant Impact (FONSI): A document prepared by a Federal agency, briefly presenting the reasons that a proposed action will not have a significant effect on the human environment; and, therefore, will not require an environmental impact statement.

Firing: The release of energy by an accelerator.

Fissile Material: Any material fissionable by low-energy neutrons consisting of or containing one or more of the fissile (capable of being split or divided) radionuclides: plutonium-239 and -241 and uranium-233 and -235. Neither natural nor depleted uranium is a fissile material. Fissile materials are classified according to the controls needed to provide nuclear criticality safety during storage and transportation.

Fissionable: A synonym for fissile material; the meaning of this term has been extended to include material that can be fissioned by fast neutrons such as uranium-238.

Flight dynamics: The study of aerodynamics and/or conditions of flight associated with airplanes, jets, or missiles.

Floodplain: The lowlands and relatively flat areas adjoining inland and coastal waters and the flood-prone areas of offshore islands including, at a minimum, that area inundated by a 1-percent or greater chance flood in any given year. The base floodplain is defined as the 100-year (1-percent) floodplain. The critical action floodplain is defined as the 500-year (0.2- percent) floodplain.

Fuel throughput: The amount of fuel used in a process over a period of time (for example, annual).

Fume hood: An enclosed ventilation system used to protect workers from inhaling fumes or vapors.

Fusion: A nuclear reaction during which light nuclei are fused together to form a heavier nucleus, accompanied by the release of immense amounts of energy and fast neutrons.

Fuzing: Mechanical or electrical means used to deteriorate an explosive charge.

– G –

Gamma rays: High-energy, short-wavelength, electromagnetic radiation accompanying fission and emitted from the nucleus of an atom. Gamma rays are very penetrating and can be stopped only by dense materials (such as lead) or a thick layer of shielding materials.

Geologic disposal: A system that is intended to be used for, or may be used for, the disposal of radioactive wastes.

Geology: The science of the earth: the materials, processes, environments, and history of the planet, including the rocks and their formation and structure.

Geophysics: The science of the earth with respect to its structure, composition, and development.

Geoscience: A term encompassing all the sciences dealing with the materials, processes, environments, and history of the earth and planets, including geology, geophysics, geochemistry, and paleontology.

Glove box: An enclosure that provides a barrier for remote handling of hazardous materials. The term glove box refers to the gloves that extend inward into the box such that the technicians can handle tools and materials without dermal (skin) contact.

Graphite converter: An electronic device that converts energy frequencies.

Groundwater: Subsurface water supply in the saturated zone below the level of the water table.

– H –

Habitat: The place or area where populations of plants, animals, and other organisms normally live.

Half-life: The time required for one-half of a specified substance to degrade or become inert.

Hazardous air pollutants: Air pollutants that are not covered by ambient air quality standards, but that may present a threat of adverse human health effects or adverse environmental effects.

Hazardous chemical: Under 29 CFR §1910.1200(c), a hazardous chemical is defined as "any chemical, which is a physical hazard or a health hazard." Physical hazards include combustible liquids, compressed gases, explosives, flammables, organic peroxides, oxidizers, pyrophorics, and reactives. A health hazard is any chemical for which there is good evidence that acute or chronic health effects occur in exposed employees. Hazardous chemicals include carcinogens, toxic or highly toxic agents, reproductive toxins, irritants, corrosives, sensitizers, hepatotoxins, nephrotoxins, agents that act on the hematopoietic system, and agents that damage the lungs, skin, eyes, or mucous membranes.

Hazardous material: A material, including a hazardous substance, as defined by 49 CFR §171.8, that poses an unreasonable risk to health, safety, and property when transported or handled.

Hazardous/toxic waste: Any solid waste (can also be semisolid or liquid or contain gaseous material) having one or more characteristics of ignitability, corrosivity, toxicity, or reactivity, or any other waste specifically regulated as a hazardous waste defined by the *Resource Conservation and Recovery Act* (RCRA) or by the *Toxic Substances Control Act* (TSCA).

Heat exchanger: A device used to transfer heat from one material or process to another material or process. Examples include a car radiator, heat pump, and solar panels used to heat water. Industrial uses are extensive.

Heat response: The science or study of material properties involving heat.

Henry's Law: At a given temperature, the solubility of a gas in a liquid is directly proportional to the pressure of the gas above the liquid.

High bay: A specially designed room with a high ceiling. The U.S. Department of Energy (DOE) typically designs these rooms for industrial work that involves explosives, radioactive materials, and material processing.

High efficiency particulate air (HEPA) filter: A device used to remove particles from the air with a specified minimum efficiency.

High explosives: A type of explosive that detonates under the influence of a high-pressure shock or by the explosion of a suitable primary explosive (for example, trinitrotoluene [TNT] and nitroglycerin).

High voltage technology: The science or study of the technology associated with the design, fabrication, theory, and application of high potential (voltage) electrical energy. At Sandia National Laboratories/New Mexico (SNL/NM), research and development activities involve protecting materials, components, and systems from failure.

Highly enriched uranium: Uranium in which the abundance of the uranium-235 isotope is increased well above normal (naturally occurring) levels.

High neutron fluence: A high flow of neutrons.

Historic sites (resources): Cultural resources produced after the arrival of the Spanish into the middle Rio Grande valley, but earlier than 50 years ago. For the Site-Wide Environmental Impact Statement (SWEIS), this would be a site dating from A.D. 1540 to 1948. Historic sites may also include resources dating after 1948 if they are considered to be exceptionally significant.

Hydraulic conductivity: The ability of soil or other material to transmit water.

Hydrogeologic region: A sequence of hydrostratigraphic units, bounded by faults, with distinctive hydrogeologic characteristics such as depth to groundwater or hydraulic conductivity.

Hydrologic surface connection: A connection between two hydrologic regimes, for example, between the groundwater and an arroyo or spring.

Hydrology: The science dealing with the properties, distribution, and circulation of natural water systems.

– I –

Inductive voltage technology: The science or study of the technology associated with the design, fabrication, theory, and application of indirectly changing (inducing) voltage from one system to another.

Inertial confinement: The science or study of the technology associated with the design, fabrication, theory, and application of confining energy associated with acceleration.

Inertial confinement fusion: A laser-initiated nuclear fusion, using the inertial properties of the reactants as a confinement mechanism.

Infrastructure: The basic facilities, services, and installations needed for the functioning of a city, plant, or other facility (such as transportation and communication systems).

Inorganic: Materials that generally do not contain carbon atoms and are not associated with living plants and animals and metals are typical examples of inorganic substances.

Ion: An atom or molecule with a positive or negative electrical charge.

Ion-exchange: The process by which atoms or molecules are exchanged based on differences in electrical potential (voltage) or charge (for example, batteries, photo processing, and water treatment).

Irradiation: The process of exposing a substance to radiation.

Isotope: Any of two or more variations of an element in which the nuclei have the same number of protons but a different number of neutrons so that their atomic masses differ.

– J –

Joining: A process that combines materials, such as bonding.

– K –

Ketones: A type of organic compound with a carbonyl group attached to two carbon atoms, typically aromatic.

– L –

Laminates: Several thin layers of material united by an adhesive or other means.

Landforms: A land feature, such as a plain, mountain, or valley.

Lapping: Polishing or smoothing a surface.

Legacy chemical: A chemical with an expired shelf life (a waste).

Light water: Ordinary water (H_2O), as distinguished from heavy water (D_2O) that contains deuterium (an isotope of hydrogen).

Low bay: A specially designed room with a normal ceiling height (approximately 10 ft). Also see definition of High bay.

Low-level waste (LLW): Radioactive waste that is not high-level waste, transuranic waste, spent nuclear fuel, or byproduct tailings from the processing of uranium or thorium.

– M –

Magnetic fusion: The science or study of the technology associated with the design, fabrication, theory, and application of combining atoms through magnetic forces.

Major source: Any stationary source or group of stationary sources in which all of the pollutant-emitting activities at such source emit, or have the potential to emit, 100 or more tons per year of any air pollutants.

Maximally exposed individual: A hypothetical person who could potentially receive the maximum dose of radiation or hazardous chemicals.

Maximum contaminant level: The maximum permissible level of a contaminant in water delivered to any user of a public water system.

Medical isotope: A radioactive element (atom) used for medical purposes.

Metalizing: A process by which a material's metallic properties are improved.

Meteorology: The science dealing with the dynamics of the atmosphere and its phenomena, especially relating to weather.

Microelectronics: Integrated circuits and electronic devices constructed of individual circuit elements with dimensions of micrometers (10^{-6} meters [m]) on a carrier with dimensions of a centimeter (10^{-2} m).

Microtechnology: The science or study of the technology associated with the design, fabrication, theory, and application involving very small structures, circuits, and materials.

Mission: An objective. The U.S. Department of Energy (DOE) has four missions (or business lines): national security, energy resources, environmental quality, and science and technology.

Mitigation: Mitigation includes: 1) avoiding an impact altogether by not taking a certain action or parts of an action; 2) minimizing impacts by limiting the degree or magnitude of an action and its implementation; 3) rectifying an impact by repairing, rehabilitating, or restoring the affected environment; 4) reducing or eliminating the impact over time by preservation and maintenance operations during the life of an action; or 5) compensating for an impact by replacing or providing substitute resources or environmental.

Mixed waste: Waste that contains both "hazardous waste" and "radioactive waste" as defined in this glossary.

– N –

National Ambient Air Quality Standards (NAAQS): Standards defining the highest allowable levels of certain pollutants in the ambient air. Because the U.S. Environmental Protection Agency (EPA) must establish the criteria for setting these standards, the regulated pollutants are called criteria pollutants.

National Emission Standards for Hazardous Air Pollutants (NESHAP): Emissions standards set by the U.S. Environmental Protection Agency (EPA) for air pollutants that are not covered by National Ambient Air Quality Standards (NAAQS) and that may, at sufficiently high levels, cause increased fatalities, irreversible health effects, or incapacitating illness.

National Pollutant Discharge Elimination System (NPDES): A provision of the *Clean Water Act* that prohibits discharge of pollutants into waters of the United States unless a special permit is issued by the U.S. Environmental Protection Agency (EPA); a state; or, where delegated, a tribal government on an Indian reservation. The NPDES permit lists either permissible discharge, the level of cleanup technology required for wastewater, or both.

National Register of Historic Places: The official list of the Nation's cultural resources that are considered worthy of preservation. The National Park Service maintains the list under direction of the Secretary of the Interior. Buildings, structures, objects, sites, and districts are included in the National Register for their importance in American history, architecture, archeology, culture, or engineering. Properties included on the National Register range from large-scale, monumentally proportioned buildings to smaller scale, regionally distinctive buildings.

Near-fission: A close simulation of fission (or splitting of an atom) without actually splitting atoms.

Near-fission spectrum radiation: Radiation used during testing that simulates radiation generated through fission.

Neotropical migrants: Birds that seasonally migrate to nesting or wintering areas in the neotropical region extending from the northern edge of the tropical forest in Mexico south to Cape Horn in South America.

Neutron: An uncharged elementary particle with a mass slightly greater than that of the proton, found in the nucleus of every atom heavier than hydrogen-1.

Neutron generator: A device that initiates nuclear fission by providing a flux of neutrons at the proper time. A neutron generator consists of a neutron

tube, miniature accelerator, power supply, and timer.

Neutron science: The science or study of technology associated with equipment design, equipment fabrication, theory, and application of neutrons.

Neutron tube: A component (part) of a neutron generator.

Nonattainment area: An area that the U.S. Environmental Protection Agency (EPA) has designated as not meeting (that is, not being in attainment of) one or more of the National Ambient Air Quality Standards (NAAQS) for criteria pollutants. An area may be in attainment for some pollutants, but not others.

Nonhazardous chemical waste: Chemical waste not defined as a *Resource Conservation and Recovery Act* (RCRA) hazardous waste.

Noninvolved worker: A worker who would be near the site of an action but would not participate in the action.

Nonnuclear component: Any one of thousands of parts, not containing radioactive or fissile material (plutonium-239, uranium-233, or uranium-235), that are required in a nuclear weapon.

Nonproliferation: Preventing the spread of nuclear weapons, nuclear weapon materials, and nuclear weapon technology.

Notice of Intent (NOI): A notice published in the *Federal Register* that an environmental impact statement (EIS) would be prepared and considered. An NOI describes the proposed action and alternatives and the Federal agency's scoping process, and states the name and address of the person within the agency who can answer questions about the proposed action and EIS.

Nuclear component: A part of a nuclear weapon that contains fissionable or fusionable material.

Nuclear material: A composite term applied to 1) special nuclear material; 2) source material such as uranium or thorium or ores containing uranium or thorium; and 3) byproduct material, which is any radioactive material that is made radioactive by exposure to the radiation incident to the process of producing or using special nuclear material.

Nuclear medicine: The science of medicine specializing in nuclear materials, including medical isotopes.

Nuclear Nonproliferation Treaty: A treaty with the aim of controlling the spread of nuclear weapons technologies, limiting the number of nuclear weapons states, and pursuing, in good faith, effective measures relating to the cessation of the nuclear arms race. The treaty does not invoke stockpile reductions by nuclear states, and it does not address actions of nuclear states in maintaining their stockpiles.

Nuclear weapon: Any weapon in which the explosion results from the energy released by reactions involving atomic nuclei (fission, fusion, or both).

Nuclear weapons complex: The U.S. Department of Energy (DOE) sites supporting the research, development, design, manufacture, testing, assessment, certification, and maintenance of the Nation's nuclear weapons and the subsequent dismantling of retired weapons.

– O –

Occupational Safety and Health Administration (OSHA): The Federal agency that oversees and regulates workplace health and safety, created by *Occupational Safety and Health Act* of 1970.

Opticals: Light-sensitive devices.

Ordnance: Material, including explosives, ammunition, and related equipment.

Organic chemicals: Chemicals that are based on bonds with the carbon atom. Organics can have certain properties, such as volatility, that are not typically associated with inorganics.

Outgassing: Occurs when a solid material loses embedded gas. This can be accelerated by heating a material or reducing pressure.

Ozone: The triatomic form of oxygen. In the stratosphere, ozone protects the earth from the sun's ultraviolet rays; but in lower levels of the atmosphere, ozone is considered an air pollutant.

– P-Q –

Packaging: One or more receptacles and wrappers and their contents including absorbent materials, spacing structures, thermal insulation, radiation shielding, and devices for cooling or absorbing mechanical shocks. The assembly of one or more containers and any other components necessary to ensure compliance.

Paleozoic era: Geologic time dating from 570 million to 245 million years ago when seed-bearing plants, amphibians, and reptiles first appeared.

Palynology: The study of spores and pollen. Such studies are useful in archaeological contexts to reconstruct past environments or to determine plant use by past cultures.

Particle beam: A beam of atoms or subatomic particles that have been accelerated by a particle accelerating device.

Particulate matter: Any finely divided solid or liquid material, other than uncombined water.

Person-rem: A unit of collective radiation dose applied to populations or groups of individuals; that is, a unit for expressing the dose when summed across all persons in a specified population or group.

Photolithography: A printing process using plates made according to a photographic image.

Photometrics: The science or study of the technology associated with the design, fabrication, theory, and application involving the measurement of the properties of light.

Photonics: The science or study of the technology associated with the design, fabrication, theory, and application of light energy generally having no mass and no electrical charge.

Plasma radiation: Emissions of electrically neutral, highly ionized gas composed of ions, electrons, and neutron particles.

Plume: Visible or measurable discharges of a contaminant from a given point or area of origin into environmental media.

Plutonium: A heavy, radioactive, metallic element with the atomic number 94. It is produced artificially by neutron bombardment of uranium. Plutonium has 15 isotopes with atomic masses ranging from 232 to 246 and half-lives from 20 minutes to 76 million years. Its most important isotope is fissile plutonium-239.

Potting compounds: Filler material.

Precambrian era: The oldest division of geologic time characterized by the appearance of primitive forms of life. This era began about 3.5 billion years ago and ended about 500 million years ago.

Prehistoric site (resources): For the Site-Wide Environmental Impact Statement (SWEIS), cultural resources produced before the arrival of the Spanish into the middle Rio Grande valley in A.D. 1540.

Primary explosive: A type of explosive that can explode or detonate when subjected to an energy-input stimulus such as heat, friction, spark, shock, or low-velocity impact. It does not burn. Primary explosives include mercury fulminate and lead oxide.

Programmatic environmental impact statement: A broad-scope environmental impact statement that identifies and assesses the environmental impacts of a U.S. Department of Energy (DOE) program.

Proliferation: The spread of nuclear weapons and the materials and technologies used to produce them.

Propellant: Fuels and oxidizers physically or chemically combined that undergo combustion to provide propulsion.

Proposed species: Any species of fish, wildlife, or plant that is proposed in the *Federal Register* to be listed under Section 4 of the *Endangered Species Act*.

Prototypical stack: A model stack (or exhaust location) used in air quality modeling.

Pulsed-power technologies: The science or study of the technology associated with the design, fabrication, theory, and application of accelerators and reactors that generate bursts of energy.

Pulsed-power accelerator: A single-shot device that accelerates large numbers of particles (energy) in a very short period.

Pulsed-power: Electrical energy that is delivered in short, high-energy bursts.

Pyrotechnics: The art of manufacturing or setting off explosives.

– R –

Radiant Heat Facility: A Sandia National Laboratories/New Mexico (SNL/NM) facility located in Technical Area-III where items are exposed to heat typically found in fires.

Radiation absorbed dose (rad): A unit of radiation absorbed dose. One rad is equal to an absorbed dose of 0.01 joules per kilogram.

Radiation: The particles (alpha, beta, neutrons, and other subatomic particles) or photons (such as gamma rays and X-rays) emitted from the nucleus of unstable atoms as a result of radioactive decay.

Radioactive waste: In general, waste that is managed because of its radioactive content. Waste material that contains special nuclear or byproduct material is subject to regulation as radioactive waste under the *Atomic Energy Act*.

Radioactivity: The spontaneous decay or disintegration of unstable atomic nuclei, accompanied by the emission of radiation.

Radiograph: An image produced by X-rays passing through an object.

Radioisotope or Radionuclide: An unstable isotope that undergoes spontaneous transformations, emitting radiation.

Recharge: The process by which water is added to a zone of saturation, usually by percolation from the soil surface.

Record of Decision (ROD): A public document that records a Federal agency's decision on a proposed action for which the agency has prepared an environmental impact statement. A ROD identifies the alternatives considered in reaching the decision, the environmentally preferable alternative(s), factors balanced by the U.S. Department of Energy (DOE) in making the decision, whether all practicable means to avoid or minimize environmental harm have been adopted, and if not, why they were not.

Region of influence: A geographic area within which project activities may affect a particular resource.

Rem: See "Roentgen equivalent, man."

Remediation: The process, or a phase in the process, of rendering areas contaminated by radioactive, hazardous, or mixed waste environmentally safe, whether through processing, entombment, or other methods.

Renewable energy: Energy that does not consume a fuel. Examples include solar, geothermal, and hydroelectric.

Resource area: Analyses in the Site-Wide Environmental Impact Statement (SWEIS) are grouped into two categories: resource areas (for example, infrastructure, geology and soils, and water resources) and topic areas (for example, transportation, waste generation, and accidents).

Resource Conservation and Recovery Act **(RCRA) hazardous waste:** A hazardous waste, as defined by RCRA, is a solid waste, or combination of solid wastes, which, because of its quantity, concentration, physical, chemical, or infectious characteristics may 1) cause or significantly contribute to an increasing mortality or increase in serious irreversible, or incapacitating irreversible, illness; or 2) pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, disposed of, or otherwise managed.

Riparian: Areas adjacent to rivers and streams that have a high density, diversity, and productivity of plant and animal species relative to nearby uplands.

Risk: The probability of a detrimental effect from exposure to a hazard. Risk is often expressed quantitatively as the probability of an adverse event occurring multiplied by the consequence of the event. However, separate presentation of probability and consequences is often more informative.

Robotics: The science or study of the technology associated with the design, fabrication, theory, and application of robots.

Roentgen: A unit of exposure to ionizing X- or gamma radiation equal to or producing 1 electrostatic unit of charge per cubic centimeter of air. It is approximately equal to 1 rad (a standard unit of absorbed dose of radiation).

Roentgen equivalent, man: A unit of dose equivalent. The dose equivalent in rems equals the absorbed dose in rads in tissue multiplied by the appropriate quality factor and possibly other modifying factors.

Runoff: The portion of rainfall, melted snow, or irrigation water that flows across the ground surface and eventually enters streams.

– S –

Scoping: An early and open process for determining the scope of issues to be addressed in an environmental impact statement and for identifying the significant issues related to a proposed action.

Section 106 process: A *National Historic Preservation Act* (16 U.S.C. §470 *et seq*.) review process used to identify, evaluate, and protect cultural resources eligible for nomination to the National Register of Historic Places that may be affected by Federal actions or undertakings.

Sedimentary fill: Subsurface loosely arranged rock made up of gravels, sands, silts, and clays.

Seismic: Pertaining to any earth vibration, especially related to an earthquake.

Semiconductors: Any of various solid crystalline substances having electrical conductivity greater than insulators but less than good conductors.

Sensitive species: Species within New Mexico that deserve special consideration in management and planning, but are not listed as threatened or endangered. Also, a species designated by the U.S. Forest Service whose population viability is a concern based on current or predicted numbers, density, distribution, or habitat capability.

Silica: A white or colorless crystalline compound.

Silicon chip: A nonmetallic semiconductor.

Silt: A sedimentary material consisting of fine mineral particles, intermediate in size between sand and clay.

Site-Wide Environmental Impact Statement (SWEIS): A type of programmatic environmental impact statement (EIS) that analyzes the environmental impacts of all or selected functions at a U.S. Department of Energy (DOE) site. As part of its regulations for implementation of the *National Environmental Policy Act* (NEPA), the DOE prepares site-wide EISs for certain large, multiple-program DOE sites; it may prepare EISs or environmental assessments (EAs) for the other sites to assess the impacts of all or selected functions at those sites (10 CFR §1021.330 [c]).

Socioeconomics: The science or study of social and economic effects.

Source parameters: Quantitative descriptions of properties of a substance that is entering the natural environment. An example of a source parameter is the mass of material available to enter the environment.

Special nuclear materials: As defined in Section 11 of the *Atomic Energy Act of 1954*, special nuclear material means 1) plutonium, uranium enriched in the isotope 233 or in the isotope 235, and any other material that the Nuclear Regulatory Commission determines to be special nuclear material; or 2) any material artificially enriched by any of the foregoing.

Specialty transmission line: Advanced technology electrical transmission lines.

Species of Concern: Species for which further biological research and field studies are needed to resolve their conservation status.

Spent nuclear fuel: Fuel that has been withdrawn from a nuclear reactor following irradiation, the constituent elements of which have not been separated.

Stack monitors: Air quality monitors placed in or near a ventilation discharge system.

START I and II: Terms that refer to negotiations between the U.S. and Russia (the former Soviet Union during START I negotiations) aimed at limiting and reducing nuclear arms. START I discussions began in 1982 and eventually led to a ratified treaty in 1988. The START II protocol, which has not been fully ratified, will attempt to further reduce the acceptable levels of nuclear weapons ratified in START I.

State Historic Preservation Officer (SHPO): A position in each U.S. state that coordinates state participation in the *National Historic Preservation Act* (16 U.S.C. §470 *et seq*.). The SHPO is a key participant in the Section 106 process, assistingin identifying eligible resources, evaluating effects of undertakings, and developing mitigation measures or management plans to reduce any adverse effects to eligible cultural resources.

Steel containment box: One of several large steel cubicles that comprise the "hot cell" used to perform work involving highly radioactive material. The steel boxes are located behind thick concrete shield walls with special shielded windows to view inside. Personnel located behind the shield walls perform work inside the boxes using manipulator arm devices.

Steppe: A semi-arid, grass-covered, and generally treeless plain.

Superconductors: Materials that efficiently transmit large quantities of electricity with minimal losses.

Surface water: Water on the earth's surface, as distinguished from water in the ground (groundwater).

– T –

Target: Item to be tested or radiated.

Telemetry: The science and technology of automatic measurement and transmission of data by wire, radio, or other means from remote sources.

Thermal batteries: Devices that provide heat without mechanical means.

Threatened species: Any plants or animals that are likely to become an endangered species within the foreseeable future throughout all or a significant portion of their ranges and that have been listed as threatened by the U.S. Fish and Wildlife Service or the National Marine Fisheries Service.

Threshold limit values: The recommended concentrations of contaminants workers may be exposed to according to the American Council of Governmental Industrial Hygienists.

Throughput: The number of items undergoing a process, or the amount of material consumed by a process.

Total effective dose equivalent: The sum of the effective dose equivalent (for external exposures) and the committed effective dose equivalent (for internal exposures).

Traditional cultural property: A significant place or object that is associated with historic or cultural practices or beliefs of a living community, is rooted in that community's history, and is important in maintaining the continuing cultural identity of the community.

Transient signals: A phenomenon or property of electrical current, which decays with time.

Transport pathways: The environmental media, such as groundwater, soil, or air, by which a contaminant is moved (for example, chemicals carried in the air or dissolved in groundwater and moved along by wind or groundwater).

Transuranic (TRU): An atom with an atomic number greater than uranium (92). Examples include plutonium and californium.

Transuranic (TRU) waste: Without regard to source or form, waste contaminated with alpha-emitting TRU radionuclides with half-lives greater than 20 years and concentrations greater than 100 nanocuries/gram at the time of assay.

Traveling pressure waves: Moving sound waves are actually compressed and decompressed air. The movement (or wave) is similar to water waves formed by an object dropped into water.

***Toxic Substances Control Act* (TSCA) hazardous waste:** TSCA hazardous waste is waste generated from TSCA materials exceeding identified limits in the Act and supporting regulations. Sandia National Laboratories/New Mexico (SNL/NM) manages two TSCA-regulated materials: polychlorinated biphenyls (PCBs) and asbestos. The bulk of TSCA wastes generated at SNL/NM come from decontamination and decommissioning activities.

Turbidity: A cloudy condition in water due to suspended silt or organic matter.

– U –

Unmoderated cylindrical assembly: A cylinder shaped reactor that does not require water (or other material) to manage the speed of the reaction.

Unsaturated zone: A subsurface porous region of the earth in which the pore space is not filled with water.

Utility chase: A structure (may be enclosed) in which groups of utility lines make long straight horizontal or vertical runs.

– V –

Vacuum processing: Material processing under vacuum (very low-pressure) conditions.

Vapor honing: Smoothing surfaces with vapors.

Vapor phase transport: A chemical that is present as a gas and is moving (being transported) in the environment in the gaseous (or vapor) phase.

Volatile organic compounds (VOCs): A broad range of organic compounds, often halogenated, that vaporize at typical background or relatively low temperatures, such as benzene, chloroform, and methyl alcohol, and other solvents.

Volumetric moisture content: The fraction of soil volume, usually in the vadose (or unsaturated) zone, that is water (or moisture). In the saturated zone, all pore spaces are filled with water so that the volumetric moisture content is equal to the fraction of soil that is pore space (that is, the porosity).

– W –

Wafer: Another word for a computer chip.

Waste characterization: The identification of waste composition and properties by reviewing process knowledge, nondestructive examination, nondestructive assay, or sampling and analysis. Characterization provides the basis for determining appropriate storage, treatment, handling, transportation, and disposal requirements.

Water makeup system: An automatic system that adds water to a process as needed to maintain the desired conditions.

Water table: The boundary between the two zones below the surface of the earth, the upper unsaturated zone and the deeper saturated zone.

Weapons component degradation: The aging, corroding, or weakening of a component or material.

Wetland: An area that is inundated by surface or groundwater with a frequency sufficient to support and, under normal circumstances, does or would support a prevalence of vegetation or aquatic life that requires saturated or seasonally saturated soil conditions for growth and reproduction.

Wildlife corridor: Passageways used by animals to move between various parts of their home range or, during migration, to move from summer (breeding) to winter ranges.

Withdrawn Area: The eastern portion of Kirtland Air Force Base (KAFB), totaling 20,486 acres and consisting of land within the Cibola National Forest, which has been withdrawn from public access for use by the U.S. Air Force (15,891 acres) and the U.S. Department of Energy (DOE) (4,595 acres).

– X-Y-Z

X-ray: A high-energy photon.

Z-pinch mode: A type of high-energy accelerator.

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